

What Is Claimed Is:

1. A fuel injector (1) for fuel-injection systems of internal combustion engines having an energizable actuator (10), a valve needle (3), which is in operative connection with the actuator (10) and acted upon in a closing direction by a restoring spring (23) to actuate a valve-closure member (4), which, together with a valve-seat surface (6) formed on a valve-seat body (5), forms a sealing seat; and having at least one spray-discharge orifice (7), which is formed downstream from the sealing seat, wherein a guide region (37), which is formed in the valve-seat body (5) and in which the valve-closure member (4) is guided, has a design that tapers conically in a flow direction of the fuel.

2. The fuel injector as recited in Claim 1, wherein the guide region (37) is formed on the inflow side of the sealing seat.

3. The fuel injector as recited in Claim 1 or 2, wherein, as a result of the conicalness, an impact pressure prevails in the fuel that is present in the guide region (37).\

4. The fuel injector as recited in Claim 3, wherein the impact pressure in the guide region (37) leads to a hydraulic self-centering of the valve-closure member (4) in the guide region (37).

5. The fuel injector as recited in one of the Claims 1 through 4, wherein a cone-opening angle of the guide region (37) is between 4° and 15°.

6. The fuel injector as recited in one of the Claims 1 through 5, wherein guide play existing between the valve-closure member (4) and the valve-seat body (5) amounts to

approximately 4 μm in the closed state of the fuel injector (1).

7. The fuel injector as recited in one of the Claims 1 through 6, wherein guide play existing between the valve-closure member (4) and the valve-seat body (5) amounts to approximately 8 μm in the open state of the fuel injector (1).

8. The fuel injector as recited in one of the Claims 1 through 7, wherein the valve-closure member (4) has a spherical design.

9. The fuel injector as recited in one of Claims 1 through 8, wherein the valve-seat member (4) is connected to the valve needle (3) by welding or soldering.

10. The fuel injector as recited in one of the Claims 1 through 9, wherein the valve-closure member (4) has beveled sections (38) in the guide region (37).

11. The fuel injector as recited in one of the Claims 1 through 10, wherein both the guide region (37) and the sealing seat are jointly drilled and ground with a shared axis of symmetry, in one clamping.